Installation, Start-Up and Service Instructions

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SAFETY CONSIDERATIONS

Installing and servicing air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install or service air-conditioning equipment.

Untrained personnel can perform basic maintenance, such as cleaning and replacing filters. All other operations should be performed by trained service personnel. When working on air conditioning equipment, observe safety precautions in literature, tags, and labels attached to unit.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions *thoroughly.* Consult local building codes and the National Electrical Code (NEC) for special installation requirements.

⚠ WARNING

Before installing or servicing system, always turn off main power to system. There may be more than one disconnect switch. Turn off accessory heater power if applicable. Electrical shock can cause serious personal injury.

GENERAL

⚠ CAUTION

This system uses R-410A, which has higher pressures than R-22 and other refrigerants. No other refrigerant may be used in this system. All equipment must be designed to handle R-410A refrigerant. If unsure about equipment, consult the equipment manufacturer.

These instructions cover the installation, start-up and service of cooling only and heat pump duct-free systems.

INSTALLATION

Step 1 — Complete Pre-Installation Checks

UNPACK UNITS (See Fig. 1) ó Move the unit to final location. Remove unit from carton, being careful not to damage service valves and grilles. See Table 1A for installation materials included in shipment and see Table 1B for field-supplied materials needed to complete the installation.

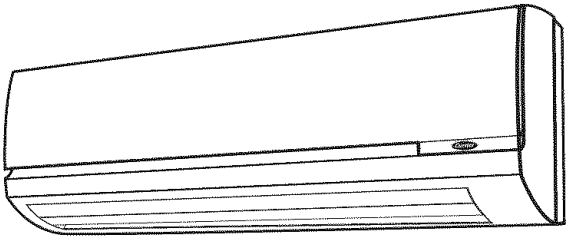
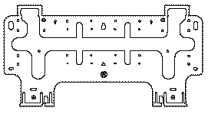
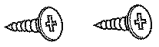


Fig. 1 — 40QNC,QNQ Units

Table 1A — Installation Materials — Included In Shipment

DESCRIPTION	QTY	USAGE
Wall Hanging Bracket 	1	For indoor unit installation.
Screws, 4xL10 	2	For affixing unit and hanging bracket.
Screws, 5xL25	5/14*	For wall hanging bracket installation. For wireless remote control mounting bracket installation.
Wireless Remote Control Mounting Bracket	1	For wireless remote control installation.

*40QNC01824, 40QNQ018,024:5
40QNC,QNQ030,036:14

Table 1B — Installation Materials — Field-Supplied

NAME	SPECIFICATIONS
Connection Pipe (nominal capacity)	Liquid line: $^{3}/_{8}$ in. (40QNC,QNQ018-036) Mixed Phase line: $^{5}/_{8}$ in. (40QNC01824 and 40QNQ018, 024), $^{3}/_{4}$ in. (40QNC,QNQ030,036)
Wall Sleeve	—
Wall Cap	—
Finishing Tape	PVC Film
Fastening Tape	—
Pipe Insulation	—
Drain Hose	$^{5}/_{8}$ in. (40QNC01824 and 40QNQ018,024) $^{3}/_{4}$ in. (40QNC,QNQ030,036)
Sealer Putty	—
Power Supply Cable	AWG 14 or higher
Electrical Connecting Cable Between Indoor and Outdoor Unit	Cable Type: AWG 14 synthetic rubber insulation with Neoprene coating, according to NEC codes.

LEGEND

AWG — American Wire Gauge
NEC — National Electrical Code

INSPECT SHIPMENT ó File a claim with the shipping company if shipment is damaged or incomplete. Check the unit nameplate to ensure unit matches the job requirements.

CONSIDER SYSTEM REQUIREMENTS ó Consult local building codes and NEC for special installation requirements. Use only designated indoor units with outdoor units. See Tables 2 and 3.

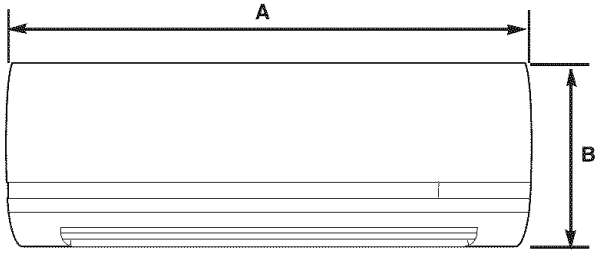
Table 2 — Matching Indoor Units to Outdoor Units

OUTDOOR UNIT	COOLING ONLY OR HEAT PUMP	INDOOR UNIT
38HDF018	Cooling Only	40QNC01824
38HDF024	Cooling Only	40QNC01824
38HDF030	Cooling Only	40QNC030
38HDF036	Cooling Only	40QNC036
38QRF018	Heat Pump	40QNQ018
38QRF024	Heat Pump	40QNQ024
38QRF030	Heat Pump	40QNQ030
38QRF036	Heat Pump	40QNQ036

See Fig. 2 for unit dimensions. Allow sufficient space for airflow clearance, wiring, refrigerant piping, and servicing units. See Fig. 3.

Avoid mounting the unit in areas that are:

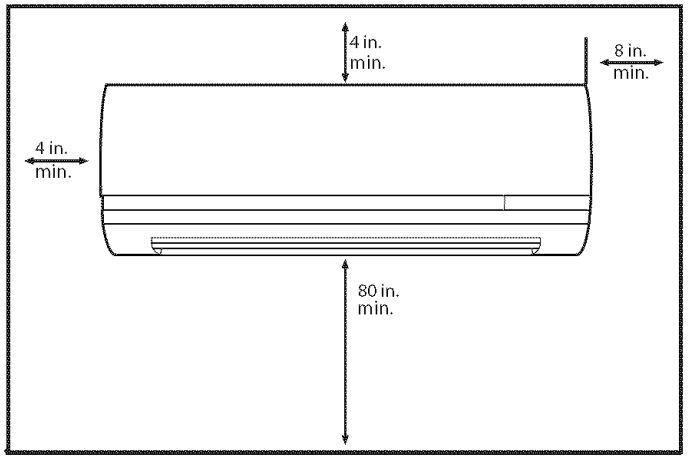
- exposed to direct sunlight
- too close to heat sources
- too close to humid conditions
- located in an area with oily ambient conditions.

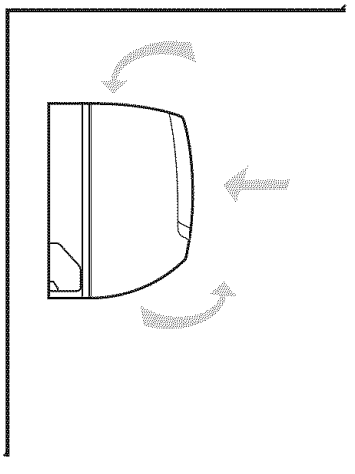


40QNC,QNQ

	40QNC,QNQ 018-024 DIMENSIONS (in.)	40QNC,QNQ 030, 036 DIMENSIONS (in.)
A	42.5	57.5
B	11.6	13.4
C	7.9	9.5

Fig. 2 — Unit Dimensions





40QNC,QNQ UNITS

Fig. 3 — Unit Clearances

Table 3 — Physical Data

SYSTEM SIZE	018	024	030	036
NOMINAL CAPACITY (Btuh)	18,000	24,000	30,000	36,000
OPERATING WEIGHT (lb)	31	31	51	51
MOISTURE REMOVAL RATE (Pints/hr) (40QNC/QNQ)	5.4/5.2	7.9/7.9	8.8/9.2	13.0/12.8
REFRIGERANT				
Type	R-410A			
Control Device (Cooling)	Accurator Piston at Outdoor Unit			
Control Device (Heating)	Accurator Piston at Outdoor Unit			
Factory Charge (lb)*	6.0	6.3	7.4	10.5
INDOOR FAN				
Rpm/Cfm (High)	1335/645	1335/645	1030/730	1200/900
Rpm/Cfm (Med)	1120/525	1120/525	930/630	1050/750
Rpm/Cfm (Low)	1000/460	1000/460	830/530	900/600
Motor Watts	64	64	74	74
Blowers Quantity...Size	1...4.0 x 33.7	1...4.0 x 33.7	2...4.2 x 23.5	2...4.2 x 23.5
INDOOR COIL				
Face Area (sq ft)	3.0	3.0	4.9	4.9
No. Rows	2	2	2	2
FPI (40QNC/QNQ)	16/16	16/20	18/18	18/18
Circuits	5	5	9	9
FILTERS				
Quantity...Size (in.)	2...12.5 x 16.1	2...12.5 x 16.1	3...17.3 x 16.1	3...17.3 x 16.1
AIR SWEEP				
Horizontal	Manual	Manual	Automatic	Automatic
Vertical	Automatic	Automatic	Automatic	Automatic
OPERATING LIMITS				
Heating (Min/Max)	—/81 F db			
Cooling (Min/Max)	59 F wb, 70 F db/74 F wb, 90 F db			
CONTROLS	Integrated Microprocessor			
Remote Controller Options	Wireless, CRC, CZM			
Diagnostics	Yes			
Defrost Method	Demand Defrost			
Timer Mode	Yes			
Warm Start Feature	Yes			
Test Mode	Yes			
Freeze Protection	Yes			
Dehumidification Mode	Yes			
Fan Mode	Yes			
Auto Changeover	Yes			
Auto Restart	Yes			
Control Voltage	24v			
System Voltage	208/230			
REFRIGERANT LINES				
Connection Type	Flare			
Mixed Phase Line (in.) OD	3/8	3/8	3/8	3/8
Vapor Line (in.) OD	5/8	5/8	3/4	3/4
Max Length (ft)	200			
Max Lift (Fan coil above) (ft)	60			
Max Drop (Fan coil below) (ft)	60			
CONDENSATE DRAIN				
Size (in.)	5/8 OD, 7/16 ID	5/8 OD, 7/16 ID	3/4 OD, 5/9 ID	3/4 OD, 5/9 ID

LEGEND

db — dry bulb
FPI — Fins Per Inch
ID — Internal Diameter
wb — wet bulb

*Factory charge is based on 25 ft of interconnecting line.

Step 2 — Mount Unit — Before mounting the 40QNC, QNQ unit on the wall with a wall hanging bracket, consider how the unit will be connected to the refrigerant piping. The indoor unit can be connected in four ways. Refer to Fig. 4 for connection options. When the piping is connected to points 1, 2 or 4, remove the knockout either at the side or at the bottom of the unit.

The indoor units are mounted on the wall with a wall hanging bracket. Position the wall hanging bracket so that it is flush with the wall. See Fig. 5 for service clearances. See Fig. 6 for wall bracket dimensions.

Complete the following when installing the wall hanging bracket:

1. Before installing the wall hanging bracket to the wall, remove it from the indoor unit by pushing at the indicated pressure points at the bottom of the unit.
2. Install the wall hanging bracket in a location that is strong enough to withstand the weight of the unit.
3. Install the wall hanging bracket so that it is level. Use a plumb line if necessary. See Fig. 5.

NOTE: Be sure that the wall hanging bracket is level. If the wall hanging bracket is not level, water will leak from the indoor unit.

4. Fasten the wall hanging bracket to the wall with 4 or more screw anchors through the holes near the outer edge of the bracket.
5. Install the wall hanging bracket flush to the wall, and ensure the bracket does not move.
6. If the unit is removed from the wall hanging bracket after installing it on the wall, remove it by pushing up on the indicated marks at the bottom of the unit body.

Step 3 — Complete Refrigerant Piping Connections — When running the piping for indoor units the piping can be connected as rear piping or side or bottom piping. Refer to Fig. 4.

REAR PIPING ó Route the piping behind the indoor unit so that the piping is concealed by the unit. For rear piping installation, drill a $2^1/_2$ in. diameter hole in the wall at point A or B in Fig. 6. Drill the hole at a slope so that the outside end is lower ($^1/_4$ in. to $^1/_2$ in.) than the inside end to ensure optimal drainage. Refer to Fig. 7. Pass the pipe through the hole.

SIDE OR BOTTOM PIPING ó Remove the knockout in the unit and pass the piping through the wall. The pipe should slope downward and away from the unit to ensure optimal drainage.

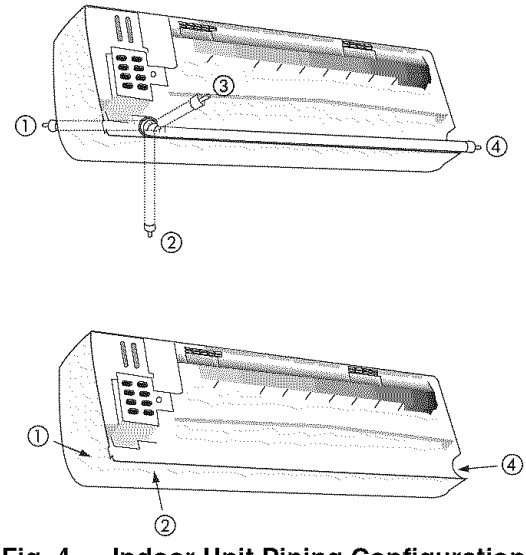
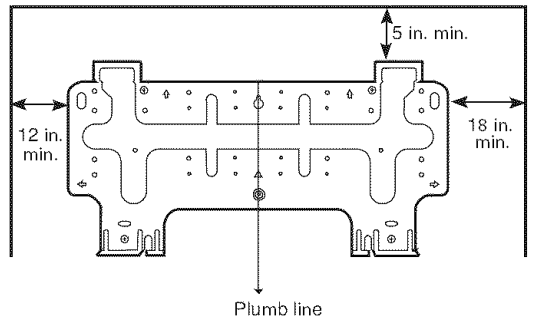


Fig. 4 — Indoor Unit Piping Configurations



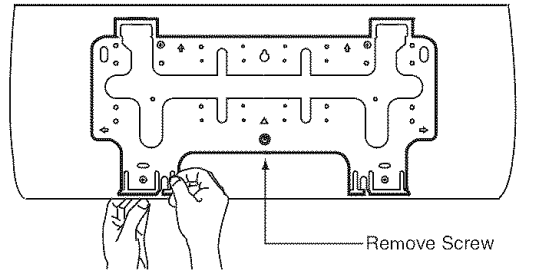


Fig. 5 — Installing the Wall Bracket

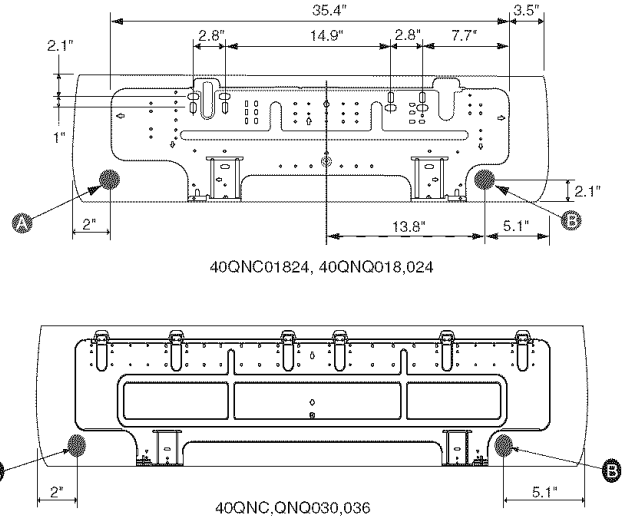


Fig. 6 — Wall Bracket Dimensions

ROUTING THE DRAIN HOSE AND REFRIGERANT PIPING ó The drain hose and drain cap are assembled as shown in Fig. 8 in the factory. To do right-side (①), right-bottom (②) or right-back (③) piping in Fig. 4 draw the drain hose to right-side piping direction. (It is not always necessary to exchange the location of drain hose and drain cap.)

1. Tie together the refrigerant piping, the drain hose, and the electrical connection wire.
2. Route the refrigerant piping in the required direction, and bend carefully avoiding pipe deformation.
3. Bind the drain hose and the electrical connection wire together with fastening tape.
4. The drain hose should be at the bottom. See Fig. 9 and 10.
5. For left-hand piping, fit the pipes and the wiring into the recess at the back of the unit.

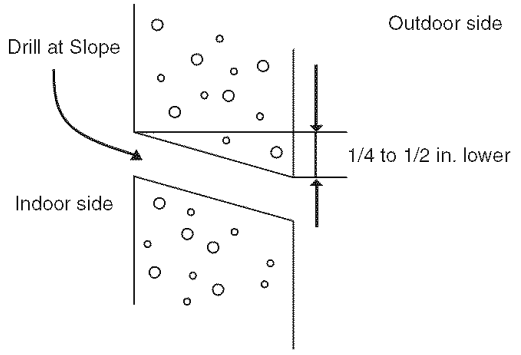


Fig. 7 — Placement of Connection Piping

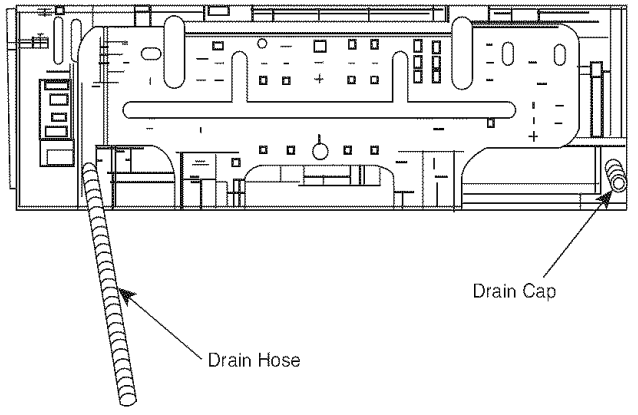


Fig. 8 — Location of Drain Hose and Cap

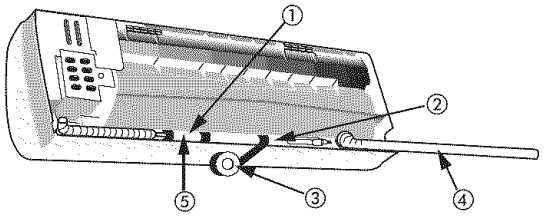


Fig. 9 — Location of Piping

INSTALLING THE INDOOR UNIT BODY TO THE WALL HANGING BRACKET

1. Pass the pipes through the wall sleeve and then hook the indoor unit body on top of the wall hanging bracket.
2. For left-hand piping, hang the unit on top of the wall hanging bracket and incline the unit using a tool such as a screwdriver set between the middle area of the body and bottom right of the wall hanging bracket. Connecting the pipe can be done more easily if the unit is inclined.
3. Fix the bottom part of the unit to the wall hanging bracket by pushing it carefully until the two bracket hooks fit into the marked places at the base of the unit until it snaps into place. Refer to Fig. 11.

NOTE:

- Do not crush or kink the indoor piping. Avoid sharp bends with a bend radius of less than 4 inches.
- Do not over bend the same part of the pipe frequently.
- Do not remove the flare nut from the indoor unit pipe until the piping is connected.

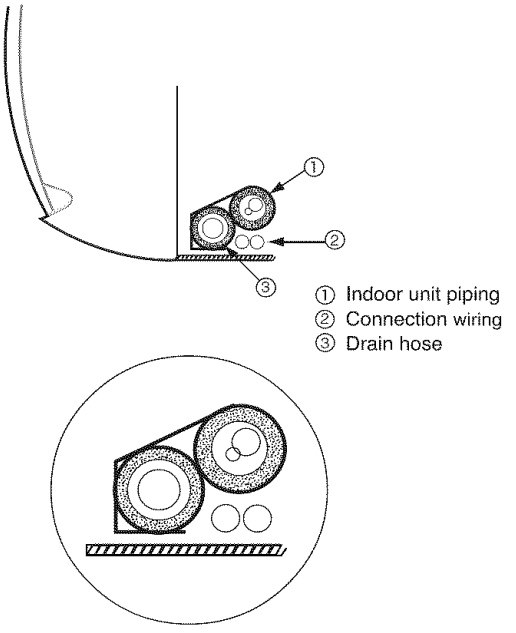


Fig. 10 — Location of Piping, Hose and Wiring

OUTDOOR UNITS ó Outdoor units may be connected to indoor units using field-supplied tubing of refrigerant grade and condition. See Table 3 for correct line sizes. Do not use less than 10 ft of interconnecting tubing.

⚠ CAUTION

DO NOT BURY MORE THAN 36 IN. OF REFRIGERANT PIPE IN THE GROUND. If any section of pipe is buried, there must be a 6-in. vertical rise to the valve connections on the outdoor unit. If more than the recommended length is buried, refrigerant may migrate to cooler, buried section during extended periods of system shutdown. This causes refrigerant slugging and could possibly damage the compressor at start-up.

NOTE: Both mixed phase and vapor refrigerant lines must be insulated.

If either refrigerant tubing or indoor coil is exposed to the atmosphere, the system must be evacuated following good refrigeration practices.

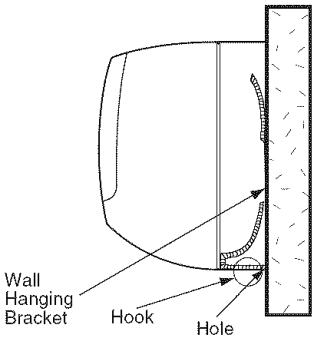
Run refrigerant tubes as directly as possible, avoiding unnecessary turns and bends. Suspend refrigerant tubes so they do not damage insulation on vapor tube and do not transmit vibration to structure. Also, when passing refrigerant tubes through a wall, seal the opening so that vibration is not transmitted to structure. Leave some slack in refrigerant tubes between structure and outdoor unit to absorb vibration.

MAKE PIPING SWEAT CONNECTIONS ó Remove plastic caps from liquid and suction service valves. Use refrigerant grade tubing.

Position tube end downward and cut the tube to the requested length. Remove the burrs with a reamer. See Fig. 12.

NOTE: Oil in the compressor is extremely susceptible to moisture absorption. Keep ends of tubing sealed during installation.

Remove flare nuts from the unit connections and place them on the tube end. Flare the tube with the flaring tool. The flare end must not have any burrs or imperfections. The length of the flared walls must be uniform. See Fig. 13.



UNIT SIZE	DIMENSION	
	A	B
40QNC01824	13.4	10.6
40QNC030	12.2	12.2
40QNC036	12.2	12.2
40QNQ018	13.4	10.6
40QNQ024	13.4	10.6
40QNQ030	12.2	12.2
40QNQ036	12.2	12.2

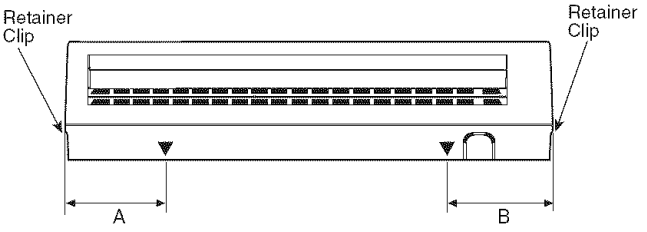


Fig. 11 — Wall Hanging Details

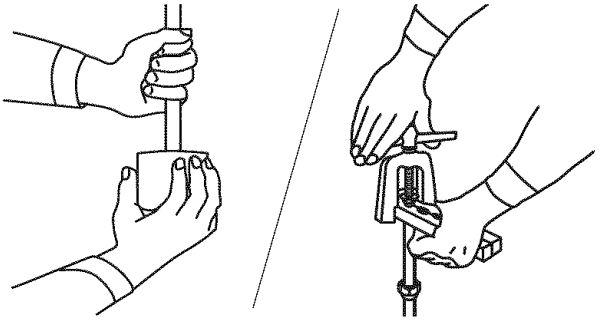


Fig. 12 — Removing Burrs

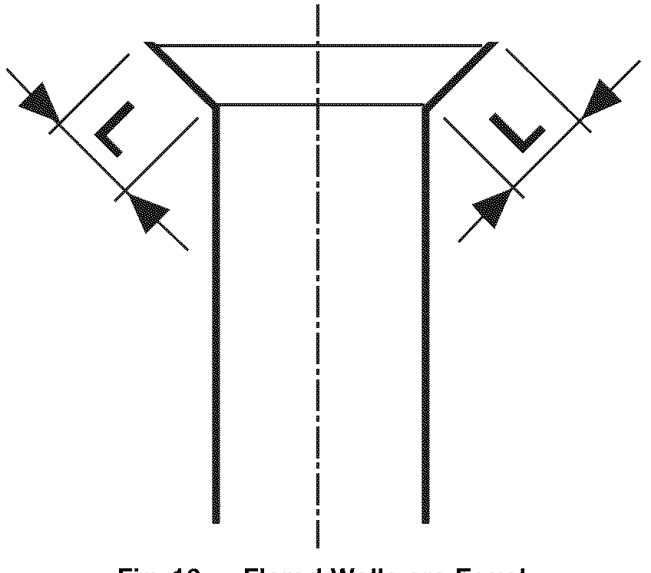


Fig. 13 — Flared Walls are Equal

Lubricate the tube end and thread of the flare fitting with antifreeze oil. Tighten the fitting several turns, then tighten it fully with two wrenches by applying the tightening torque indicated in Table 4 and Fig. 14.

⚠ CAUTION

Insufficient tightening torque will cause gas leaks. Overtightening the fittings will damage the tube flaring and cause gas leaks. Equipment damage and personal injury may result.

AIR PURGING AND LEAK TEST ó Only use a vacuum pump to purge air from the piping. Refer to Fig. 15.

IMPORTANT: Do not use the system compressor as a vacuum pump.

IMPORTANT: Do not use the unit refrigerant gas to purge the connecting pipes.

Remove the caps from the valves. Create a vacuum with a vacuum pump connected to the service connection of the suction shut-off (gas), as shown, keeping the shutoff valves completely shut until a 50 Pa vacuum has been reached.

Open the mixed phase valve for 3 seconds, then quickly shut it to check for possible leaks.

Replace caps and check for leaks using a leak detector specific for R-410A refrigerant.

After the leak test, fully open the three-way valves.

Table 4 — Tightening Torque

VALVE SIZE	FLARE NUT (in.-lb)
3/8 in.	372
5/8 in.	487
3/4 in.	885

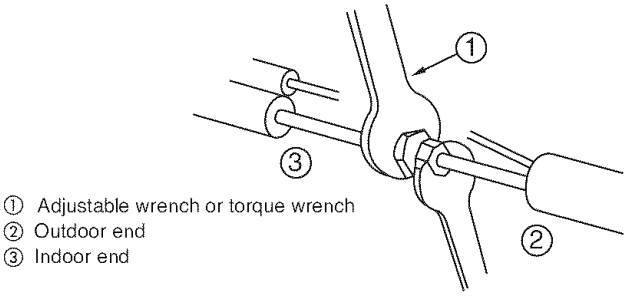


Fig. 14 — Tightening Connections

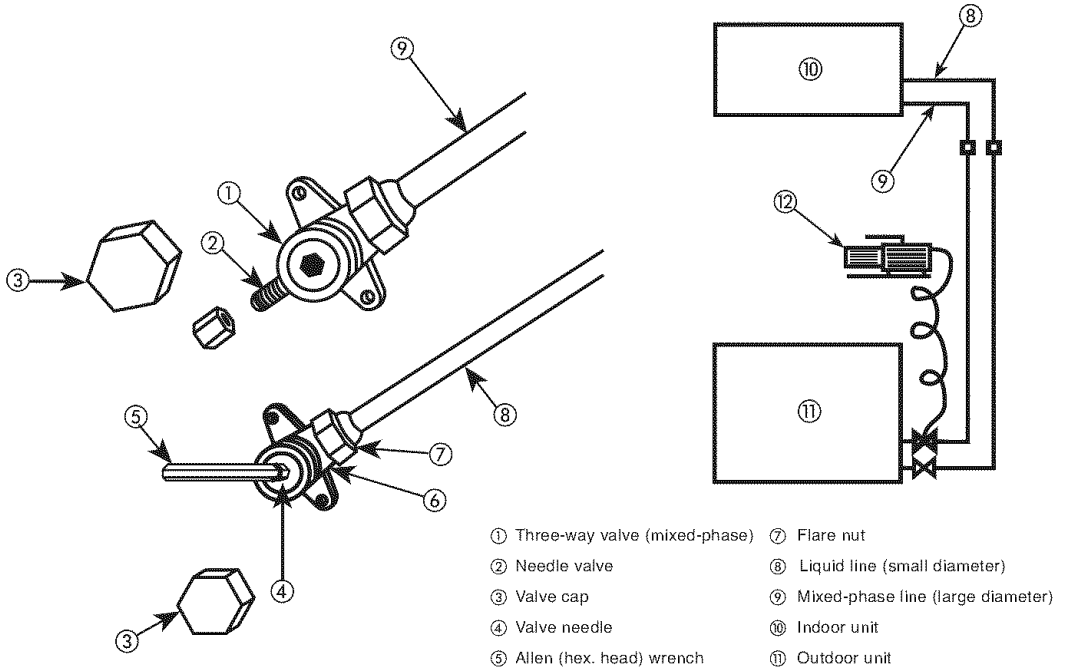


Fig. 15 — Air Purging

Step 4 — Make Electrical Connections

⚠ WARNING

Unit cabinet must have an uninterrupted, unbroken electrical ground to minimize the possibility of personal injury if an electrical fault should occur. This ground may consist of electrical wire connected to unit ground lug in control compartment, or conduit approved for electrical ground when installed in accordance with NEC, and local electrical codes. Failure to follow this warning could result in the installer being liable for the personal injury of others.

⚠ CAUTION

Unit failure as a result of operation on improper line voltage or excessive phase imbalance constitutes abuse and may cause damage to electrical components. Such operation would invalidate any applicable Carrier warranty.

⚠ WARNING

Before performing service or maintenance, be sure main power switch is turned OFF and indoor blower and outdoor fan have stopped. Failure to do so may result in electrical shock or injury from rotating fan blades.

POWER WIRING (Fig. 16-19) ó Unit is factory wired for voltage shown on nameplate. Provide adequate, fused disconnect switch within sight of unit, readily accessible, but out of reach of children. Provision for locking the switch open (off) is advisable to prevent power from being turned on while unit is being serviced. Disconnect switch, fuses, and field wiring must comply with the NEC and local code requirements. Use copper wire only between the disconnect switch and unit. Use minimum 60 C wire for the field power connection.

Open the fan coil control box panel and connect the indoor and outdoor units. Connect the wires through the terminals as shown on the unit label diagram and in Fig. 16-19 and Table 5. Unit must be grounded.

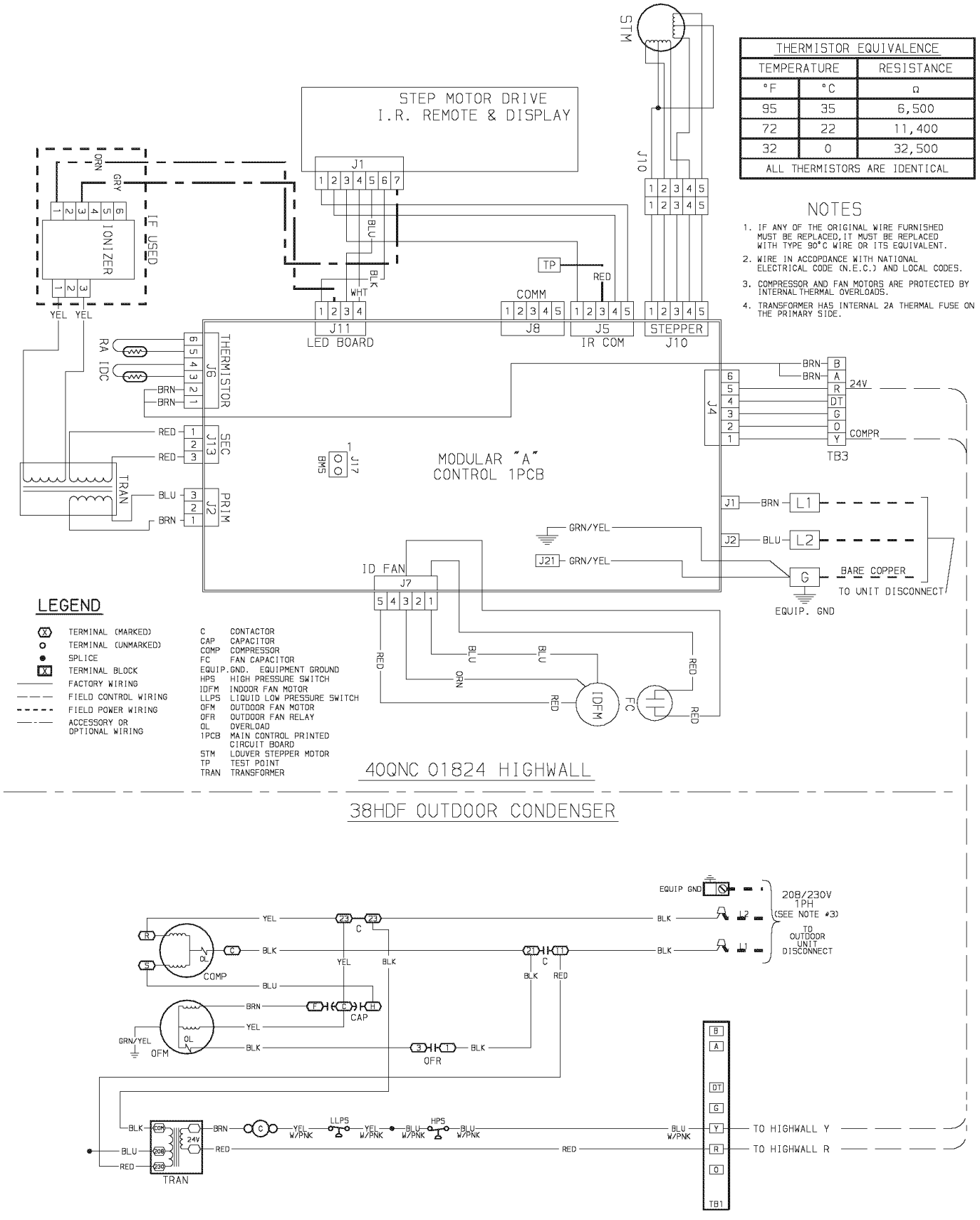


Fig. 16 — 40QNC01824 Matched with 38HDF Typical Wiring Schematic

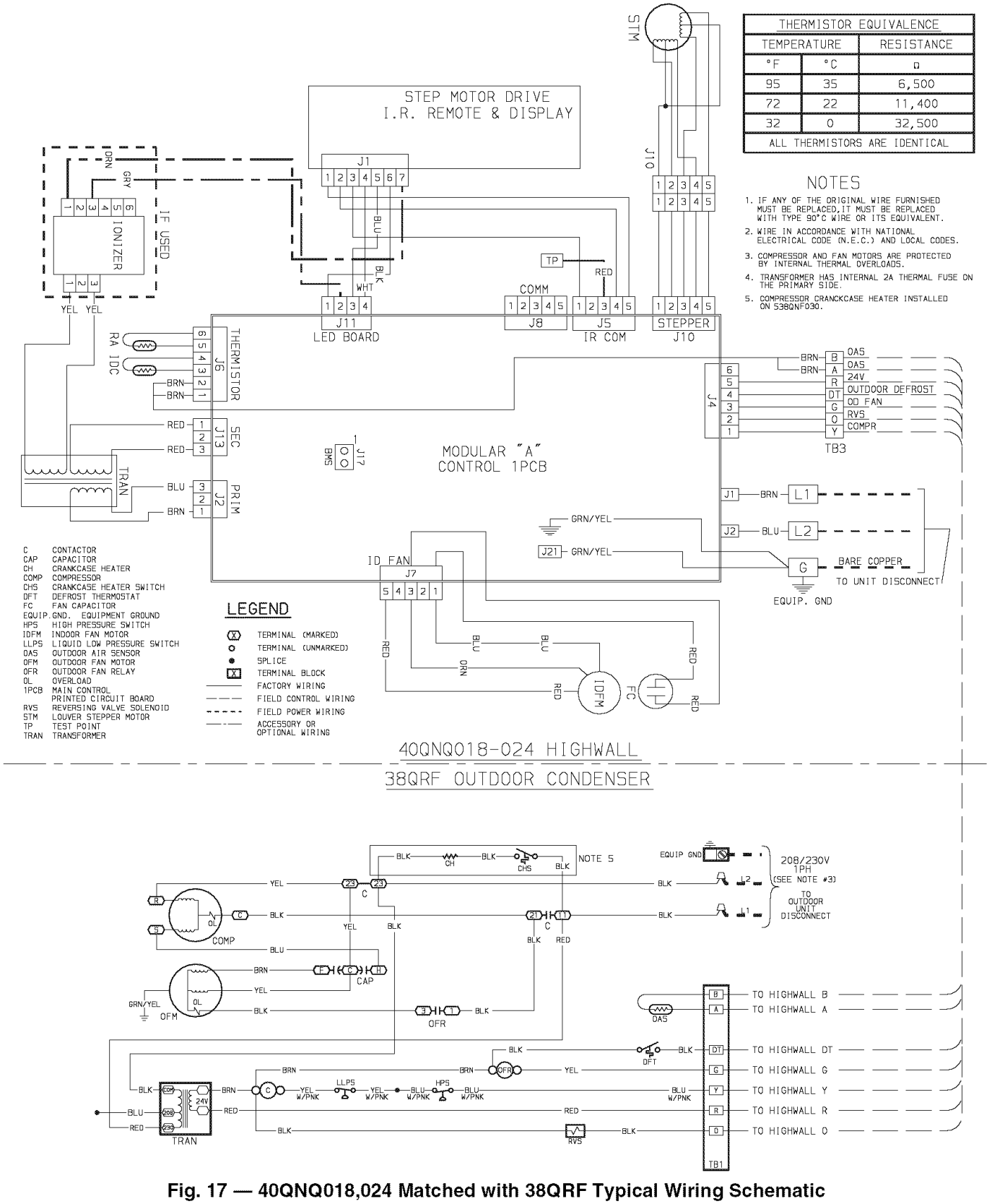


Fig. 17 — 40QNQ018,024 Matched with 38QRF Typical Wiring Schematic

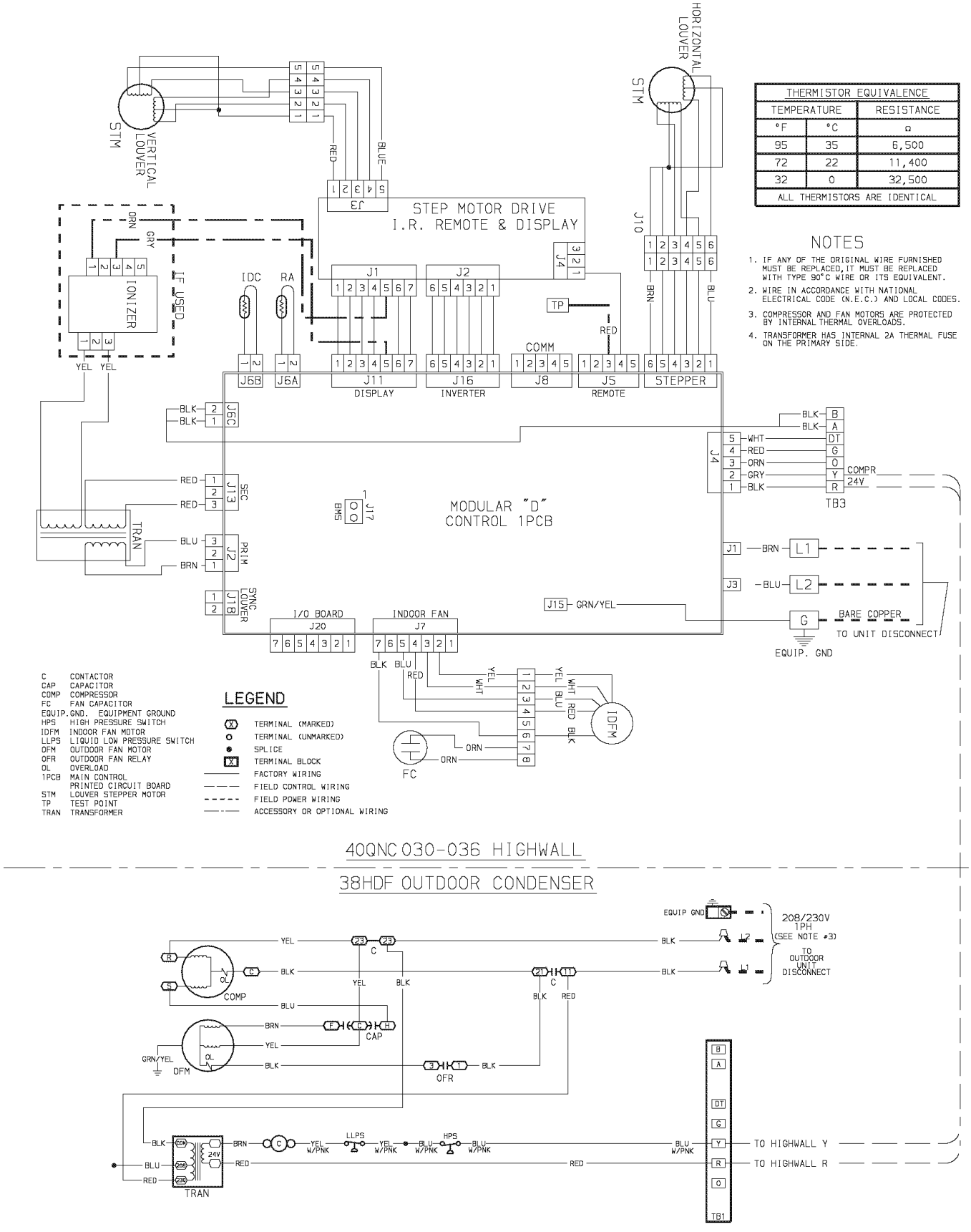


Fig. 18 — 40QNC030,036 Matched with 38HDF Typical Wiring Schematic

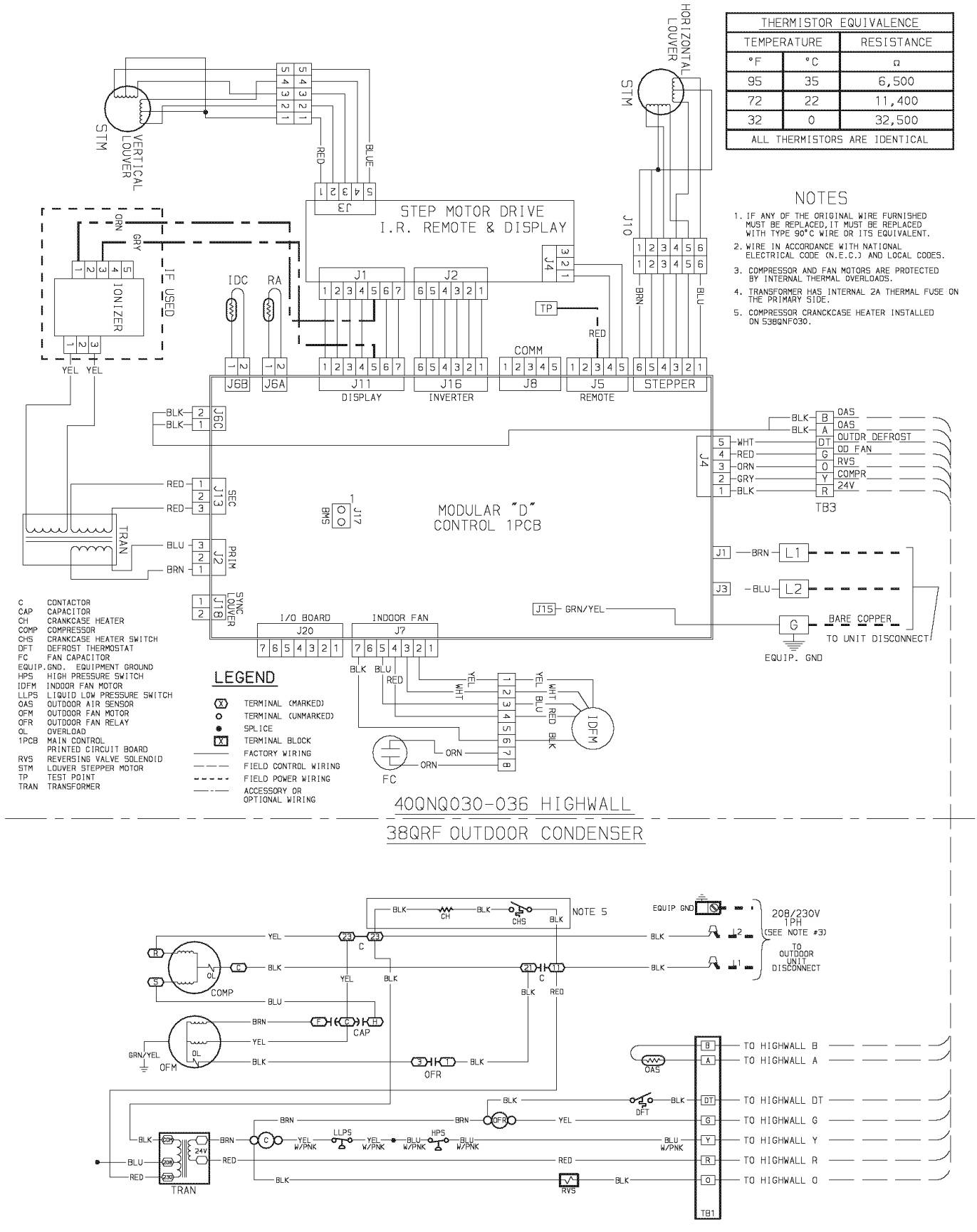


Fig. 19 — 40QNQ030,036 Matched with 38QRF Typical Wiring Schematic

Table 5 — 40QNC,QNQ Fan Coil Electrical Data

UNIT SIZE	V-PH-Hz	VOLTAGE RANGE*		FAN		POWER		MIN WIRE SIZE
		Min	Max	FLA	Motor Power (Watts)	MCA	MOCP	
40QNC01824	208/230-1-60	187	253	0.38	64	0.48	15	14
40QNC030	208/230-1-60	187	253	0.38	74	0.48	15	14
40QNC036	208/230-1-60	187	253	0.44	74	0.55	15	14
40QNQ018	208/230-1-60	187	253	0.38	64	0.48	15	14
40QNQ024	208/230-1-60	187	253	0.38	64	0.48	15	14
40QNQ030	208/230-1-60	187	253	0.38	74	0.48	15	14
40QNQ036	208/230-1-60	187	253	0.44	74	0.55	15	14

LEGEND

FLA — Full Load Amps
MCA — Minimum Circuit Amps per NEC Section 430-24
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
RLA — Rated Load Amps (Compressor)

*Permissible limits of the voltage range at which unit will operate satisfactorily.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or equipped with a breaker.
2. Motor RLA values are established in accordance with UL (Underwriters Laboratories) Standard 465.

c UL us

START-UP

Preliminary Checks

1. Check that all internal wiring connections are tight and that all barriers, covers, and panels are in place.
2. Field electrical power source must agree with unit nameplate rating.
3. All service valves must be open.
4. Crankcase heater must be tight on compressor crankcase (if equipped).

Leak Test — Field piping and fan coil must be leak tested by pressure method. Use R-410A at approximately 25 psig backed up with an inert gas to a total pressure not to exceed 245 psig.

NOTE: Leak detectors should be designed to detect HFC (hydrofluorocarbon) refrigerant.

Evacuate and Dehydrate — Field piping and fan coil must be evacuated and dehydrated following good refrigeration practices.

Start Unit with Operating Test — Turn power on to the unit. Insert batteries in remote control. Press the ∧ and the buttons on the remote control for 5 seconds. The remote control will be cleared and the time segment will display the Src1=service test mode.

Press the button to transmit the service test signal to the unit. After the test has completed press the ⏻ button to leave the test menu.

NOTE: When 30 seconds have elapsed and no buttons have been pressed, the remote control will automatically exit the test menu and resume its normal operation.

Configuring Two Indoor Unit Remote Controls — If two indoor units are being installed in the same room, working independently, two remote controls need to be configured for proper operation.

UNIT CONFIGURATION ó Turn the unit off by pressing the ⏻. Press and hold the M and buttons of the remote control for more than 5 seconds. The display will be cleared and the time segments will display the first configuration item (rAdr=remote address) and the temperature segments will display the default value of this configuration item (Ab=control of both indoor units). Press ∧ and ∨ to change the default value to the new value of (a) or (b). Press the button to transmit the new configuration to the unit. Press the ⏻ button to leave the configuration menu.

REMOTE CONTROL CONFIGURATION ó Turn the unit off by pressing the ⏻ button. Press and hold the ∨ and buttons for more than 5 seconds. The display will be cleared and the time segments will display the first configuration item (CH=remote address) and the temperature segments will display the default value of this configuration item (Ab=control of both indoor units). Press ∧ and ∨ to change the default value to the new value of (a) or (b). Press the button to transmit the new configuration to the unit. Press the ⏻ button to leave the configuration menu.

NOTE: When 30 seconds have elapsed and no buttons have been pressed, the remote control will automatically exit the configuration menu and resume its normal operation.

SERVICE

⚠ WARNING

Before performing recommended maintenance, be sure unit main power switch is turned off. Failure to do so may result in electrical shock or injury form rotating fan blade.

Pumpdown Procedure — The system may be pumped down in order to make repairs on the low side without losing complete refrigerant charge.

1. Attach pressure gage to suction service valve gage port.
2. Frontseat the mixed phase line valve.

⚠ CAUTION

The unit coils hold only the factory-designated amount of refrigerant. Additional refrigerant may cause units to relieve pressure through the compressor internal pressure relief valve (indicated by a sudden rise of suction pressure) before suction pressure reaches 20 psig. If this occurs, shut off unit immediately then frontseat the suction valve and remove and recover excess refrigerant following accepted practices. Equipment damage may result.

3. Start unit and run until suction pressure reaches 5 psig.
4. Shut unit off and frontseat suction valve.
5. Depressurize low side of unit and recover refrigerant following accepted practices.

Filter Drier — Whenever the filter drier is exposed to the atmosphere it must be replaced. Only use factory specified liquid-line filter driers with rated working pressure of at least 600 psig or more.

NOTE: Do not install a suction-line filter drier in the mixed phase line.

Refrigerant Charging

⚠ WARNING

To prevent personal injury, wear safety glasses and gloves when handling refrigerant. Do not overcharge system ó this can cause compressor flooding.

NOTE: Do not vent or depressurize unit refrigerant to atmosphere. Remove and recover refrigerant following accepted practices.

TROUBLESHOOTING

See Tables 6 and 7 for troubleshooting information.

Fault Code — Once a failure occurs with the indoor unit in operation, the green LED on the indoor unit flashes at intervals of 0.5 seconds. The fault code is deduced from the number of times the green LED flashes, blocking unit operation. Between one flash cycle and the next one, a pause of 3 seconds elapses.

Table 6 — Green LED (Indoor Unit Fault)

CODE	DESCRIPTION
3	Room Air Sensor Fault
4	Indoor Unit Coil Sensor Fault
14	Outdoor Unit Air Sensor Fault

Table 7 — Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Compressor and Fan of the Outdoor Unit Will Not Start	Unit not energized	Check the main power connection.
	Main switch is set to OFF	Check and put it to ON position.
	Main switch fuses are blown	Replace fuses.
	Compressor cycling protection is on	Wait for 3 minutes.
	Main power voltage is too low	Check and set to the correct voltage.
	Electrical connections are too loose or are wrong	Check and tighten or correct connections.
Compressor Will Not Start, But Outdoor Fan is Operating	Electrical connections of compressor are loose or wrong	Check and tighten or repair compressor.
Compressor Stops Due to Overtemperature	Compressor burnt out; seized or protection device on	Check for the cause and replace compressor if necessary.
	Wrong refrigerant charge in unit (excessive or low) or air or other noncondensable gasses in the circuit	Drain refrigerant, evacuate and recharge. CAUTION: Do not vent refrigerant to the atmosphere; use refrigerant recovery equipment.
	Main voltage is too high or too low	Check voltage setting and adjust if necessary.
	Condenser coil obstructed	Remove obstruction.
	Outdoor fan off	Check cause and resume operation or repair.
	Wrong indoor unit thermistors	Replace thermistors.
	Refrigerant circuit clogged	Check and remove obstructions.
	Reversing valve faulty on heat pump models	Replace reversing valve.
	Expansion device clogged or covered with ice	Drain refrigerant, evacuate and recharge. CAUTION: Do not vent refrigerant to the atmosphere; use refrigerant recovery equipment.
Compressor Runs Continuously	Unit selected is too small for application requirements	Contact a qualified service technician for a system evaluation.
	Indoor temperature setting too low or too high	Check temperature setting.
	Outdoor unit fan faulty	Replace outdoor fan.
	Air or other noncondensable gasses in the circuit	Drain refrigerant, evacuate and recharge. CAUTION: Do not vent refrigerant to the atmosphere; use refrigerant recovery equipment.
	Obstructions at air intake or dirty indoor unit filters	Remove obstruction and/or clean filter.
Frequent Ice-Build-Up on Outdoor Coil	Outdoor fan is stopped	Check cause and repair.
Discharge Pressure Too High	Outdoor coil dirty or obstructed	Clean or remove obstructions.
	Condenser fan faulty	Replace condenser fan.
	Indoor temperature setting too low or too high	Check temperature setting.
	Air or other noncondensable gasses in the circuit	Drain refrigerant, evacuate and recharge. CAUTION: Do not vent refrigerant to the atmosphere; use refrigerant recovery equipment.
Discharge Pressure Too Low	Indoor temperature setting too high or too low	Check temperature setting.
	Outdoor coil dirty or obstructed	Clean or remove obstructions.
	Indoor unit air filter dirty	Clean filter.
Suction Pressure Too High	Indoor temperature setting too high or too low	Check temperature setting.
	Reversing valve faulty or internal leak	Replace reversing valve.
Suction Pressure Too Low	Indoor temperature setting too high or too low	Check temperature setting.
	Evaporator coil covered with ice	Air circulation on the evaporator not sufficient; check and repair.
	Expansion device or suction line clogged	Check and repair.
	Outdoor fan does not stop during defrost periods	Check electrical parts.
Outdoor Fan Cycling Due to Over-Temperature Protection	Electrical connection loose	Check connections.
	Fan motor burn out	Replace.
	Fan bearing seized	Check and repair.
	Expansion device clogged or covered with ice	Drain refrigerant, evacuate and replace. CAUTION: Do not vent refrigerant to the atmosphere; use refrigerant recovery equipment.

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